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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/935,842	08/24/2001	Yuichiro Yamashita	35.C15702	9786

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FITZPATRICK CELLA HARPER & SCINTO  
30 ROCKEFELLER PLAZA  
NEW YORK, NY 10112

EXAMINER

GLASS, CHRISTOPHER W

ART UNIT

PAPER NUMBER

2878

DATE MAILED: 05/30/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/935,842

Applicant(s)

YAMASHITA ET AL.

Examiner

Christopher W. Glass

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 24 March 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 8-15 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 8-15 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- ~~14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).~~
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Response to Arguments*

1. Applicant's arguments filed March 24, 2003 have been fully considered but they are not persuasive. Applicant argues on pages 15-21 that remaining claims 8-15 as amended are patentable over the prior art, including the disclosures of U.S. Patent No. 5,451,766 to Van Berkel et al. (Van Berkel) and U.S. Patent No. 5,949,483 to Fossum et al. (Fossum). The amendments made to the claims necessitate new grounds of rejection, and the examiner maintains that the subject matter of these claims is unpatentable, based on the teachings of U.S. Stauffer (U.S. Patent No. 4,410,804, acknowledged prior art appearing in IDS filed 12/06/01), Fossum, and Van Berkel. It is held that the following rejections are deemed proper.

### *Claim Rejections - 35 USC § 103*

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 8-11 and 13-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 4,410,804 to Stauffer, in view of U.S. Patent No. 5,949,483 to Fossum et al. (hereafter Fossum).

Regarding claims 8,9, and 14: Stauffer shows in Figures 1-4 embodiments of an image pickup-apparatus-comprising-first,second,third,and-fourth-photoelectric-conversion-units,each including a plurality of photoelectric conversion elements (e.g. 20,21, Figure 1; 55,57,59,61, Figure 2). A microlens 17 (within array 15, Figure 1) is provided for each of the photoelectric

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conversion units, for focusing light onto the plurality of photoelectric conversion elements included in the respective photoelectric conversion unit (see Column 2, lines 16-21). Stauffer does not expressly disclose holding units adapted to hold signals from the respective photoelectric conversion units, including at least the same number of capacitors as the number of the plurality of photoelectric conversion elements included in the respective unit. Also not specifically shown are a first common output line, to which signals from the plurality of capacitors included in the respective units are read out sequentially, and switches such that the signals from the respective photoelectric conversion units are transferred via the switch to corresponding holding units. However, it is well known to implement these configurations in such an image pickup apparatus. Fossum discloses an image pickup apparatus having microlenses disposed above each photoelectric conversion unit in the array (see Figure 5), and teaches such a configuration of holding, outputting, and transfer. Figure 3B shows readout/holding units **70** adapted to hold signals from a column of photoelectric conversion units **15**, which are shown in Figure 3A as including signal storage capacitors **205** and reset signal hold capacitors **230**. In conjunction with the column select circuit **19** and row select circuit **18**, unit **70** reads out the signals, and the photoelectric conversion units **15** transfer signals to these holding units via switches corresponding to each unit **15** (see composition of each cell according to Figure 1, Figure 3B, and Column 3, lines 7-15). It would have been obvious to one having ordinary skill in the art at the time the invention was made to provide such a configuration of components to the image pickup apparatus of Stauffer, since this arrangement is well known in the art of imaging apparatus, and in order to efficiently obtain, hold, transfer, and output signals

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from the photoelectric conversion units (e.g. comprising conversion elements **20,21**, etc.) of the array.

Regarding claim 10: Fossum shows in Figure 9 amplifiers **722, 722'** associated with reading out groups of the photoelectric conversion units to output lines **710**. It would have been obvious to one having ordinary skill in the art at the time the invention was made to provide these amplifiers in the device of Stauffer, such as to provide a common means for amplifying the read-out signals of the photoelectric conversion units, such that the signal was stronger for image processing application.

Regarding claim 11: The holding units of Fossum include capacity for holding noise signals of the photoelectric conversion elements (see Figure 3A and claim 8-9 rejection above). While Stauffer does not expressly teach a differential circuit being adapted to subtract the noise signals from photoelectric conversion signals, it is well known in the art to implement such a circuit for this purpose. Fossum shows in Figure 12 a differential circuit employed in the image pickup apparatus, comprising a differential amplifier **826** connected to two output lines **822**, and which "corrects for pixel induced variation" (Column 16, lines 55-56). It would have been obvious to one having ordinary skill in the art at the time the invention was made to provide such a circuit in the apparatus of Stauffer, by connecting two or more common output lines corresponding to the photoelectric conversion units having the plurality of photoelectric conversion elements, to a differential amplifier, in order to subtract noise from obtained image signals.

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Regarding claims 13 and 14 (see also claims 8 and 9 rejection above, regarding certain aspects of claim 14): Stauffer does not specifically teach microlenses provided one for each of

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the plurality of photoelectric conversion elements. However, it would have been obvious to one having ordinary skill in the art at the time the invention was made to provide a one-to-one correspondence of lenses **17** and conversion elements (e.g. **20,21**, Figure 1), such that sampled radiation was obtained and processed according to individual elements of the units, and since it has been shown that various correspondences of conversion elements and lenses are commonly implemented in the art (e.g. Figures 5,5A, and 5B of Fossum, Figures 1 and 2 of Stauffer). Therefore, these aspects would only involve rearrangement of parts and matters of design choice to one of ordinary skill in the art.

Regarding claim 15: Stauffer teaches reading out signals from the plurality of photoelectric conversion elements both independently and added/collectively (see Column 2, lines 39-50 and 64-68; Column 3, lines 1-19).

4. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Stauffer, in view of Fossum, as applied to claim 8 above, and further in view of U.S. Patent No. 5,451,766 to Van Berkel. The modified device of Stauffer does not expressly teach the use of a control circuit adapted to perform focus adjustment based on a plurality of signals outputted from the output lines. However, it is well known in the art to actively control the focus adjustment in such an apparatus. The image pickup apparatus of Van Berkel shows in Figure 1 an electro-optic material **8,8a,8b** disposed between the lens elements **6** and photoelectric conversion units **4**, for “applying an electrical potential across the electro-optic material **8** to adjust the effective focal length of the lens elements **6**” (Column 3, lines 3-5). It would have been obvious to one having ordinary skill in the art at the time the invention was made to provide such an electro-optic setup with the lenses **17** of Stauffer, as well as to implement in conjunction a computer or other control

circuit for controlling the operation of the electro-optic material according to obtained signals, in order to actively adjust, electrically, the lens elements 17, and to enable various focus setting adjustments or to compensate for inadequate optical arrangements of these components. This would further provide an arrangement in which “the focus of the imaging device is not entirely dependent on the nature and construction of the lens elements 6” (Van Berkel, Column 3, lines 8-10).

### *Conclusion*

5. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christopher W. Glass whose telephone number is 703-305-1980.

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The examiner can normally be reached 9:30am-6:00pm, M-F.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Porta can be reached at 703-308-4852. The fax phone number for the organization where this application or proceeding is assigned is 703-308-7722.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

cg  
May 21, 2003

  
STEPHONE ALLEN  
PRIMARY EXAMINER